

## **AMENDMENTS TO THE SPECIFICATION**

**Please amend the paragraph [0040] beginning on page 28, as follows:**

[0040] The delay circuit 7 generates a delay pulse signal Pd based on the first original pulse signal ~~P4 P0~~. For example, the delay circuit 7 is a so-called RC filter, and the delay circuit 7 includes a series connection of a resistor Rd and a capacitor Cd. A terminal on the resistor Rd side of the series connection is connected to the oscillator Os, and a terminal on the capacitor Cd side thereof is grounded. The delay pulse signal Pd indicates a change in the electric potential at a connection point "J" between the resistor Rd and the capacitor Cd.

**Please amend the paragraph [0045] beginning on page 32, as follows:**

[0045] The step-up transformer 5 includes a primary winding 51 (a combination of the two primary windings 51A and 51B described above), the secondary winding 52, two E-shaped cores 54 and 55, a bobbin 56, and an insulating tape ~~57 58~~. The bobbin 56 is made of a synthetic resin, for example, and has the shape of a hollow cylinder. The respective central protrusions 54A and 55A of the E-shaped cores 54 and 55 are inserted into a hollow part 56A of the bobbin 56, through openings on both sides of the bobbin 56. On the outer circumferential face of the bobbin 56, multiple partitions 57 are provided at equal intervals in the axial direction. First, the secondary winding 52 is wound between the partitions 57. Next, the insulating tape 58 is wound around the outside of the secondary winding 52. Finally, the primary winding 51 is wound around the outside of the insulating tape 58. In this case, the secondary winding 52 may also be wound around the outside of the primary winding 51 or around both the inside and outside of the primary winding 51. Leakage flux is reduced significantly by winding the primary winding 51 and the secondary winding 52 so as to be overlaid as described above. Accordingly, an output impedance of the step-up transformer 5 is low. In particular, the output impedance is set so as to be lower than a combined impedance of all of the plurality of cold-cathode tubes 20 connected in

parallel to each other (See Fig. 3).

**Please amend the paragraph [0095] beginning on page 55, as follows:**

[0095] Further, the size of the ballast capacitor CB is significantly smaller than the size of the inductor. In particular, since the ballast capacitor CB can be formed as the inter-layer capacity of the second substrate 50 and the like, the ballast capacitor CB only has a thickness of about the substrate. Further, when the ballast capacitor CB is used, the overcurrent protection capacitor CB-CP and the matching capacitor CM may be omitted, unlike the above-described first preferred embodiment.

Thus, in particular, in the cold-cathode tube lighting device according to the second preferred embodiment of the present invention, the second block 2 can be easily downsized. Accordingly, the cold-cathode tube lighting device according to the second preferred embodiment of the present invention is extremely effective in thinning liquid crystal displays.

**Please amend the paragraph [0101] beginning on page 58, as follows:**

[0101] The phase correction circuit 6 directly sends the first pulse signal P1 to a control terminal of the high-side power transistor Q3A of the first output circuit 9A, and sends the first pulse signal P1 to a control terminal of the low-side power transistor Q4A via the inverter InA.

The phase correction circuit 6 directly sends the second pulse signal P2 to a control terminal of the high-side power transistor Q3B of the second output circuit 9B via the inverter InB, and directly sends the second pulse signal P2 to a control terminal of the low-side power transistor via the inverter InB.

**Please amend the paragraph [0109] beginning on page 63, as follows:**

[0109] In the cold-cathode tube lighting device according to the third preferred embodiment of the present invention, in a manner similar to that of the above-described second preferred embodiment, the second block 2 may include the ballast capacitor CB.

The size of the ballast capacitor CB is significantly smaller than the size of the ballast inductor LB. In particular, since the ballast capacitor CB can be formed as the inter-layer capacity of the second substrate 50 and the like, the ballast capacitor CB only has a thickness of about the substrate. Further, when the ballast capacitor CB is used, the overcurrent protection capacitor CB-CP and the matching capacitor CM may be omitted.

Thus, in particular, in the cold-cathode tube lighting device according to the third preferred embodiment of the present invention, the second block 2 can be easily downsized. Accordingly, the cold-cathode tube lighting device according to the third preferred embodiment of the present invention is extremely effective in thinning liquid crystal displays.

**Please amend the paragraph [0122] beginning on page 70, as follows:**

[0122] In the cold-cathode tube lighting device according to the fourth preferred embodiment of the present invention, the fluctuation of the operating state of each of the cold-cathode tubes 20 is absorbed by each ballast inductor LB. Accordingly, the phase difference between the secondary voltage VA of the step-up transformer 5A and the secondary voltage VB of the step-up transformer 5B is hardly affected by the variations in the operating state among the plurality of cold-cathode tubes 20. Accordingly, during lighting of the cold-cathode tube 20, the phase difference simply needs to be maintained at a substantially constant quantity for all the cold-cathode tubes 20. The phase correction circuit 6 easily maintains the above-mentioned phase difference to be equal to the constant quantity  $180+\delta[\deg]$  using the delay circuit 7.

In addition, the phase correction circuit may calculate the output-secondary voltages VA and VB of the output circuits 9A and 9B-step-up transformers 5A and 5B and the phase

difference  $180+\delta[\text{deg}]$  between the secondary voltages VA and VB, based on the actual operating state of the cold-cathode tube 20 and the like with a logic circuit such as a CPU. Instead, the phase correction circuit may store the table of the secondary voltages VA and VB of the step-up transformers 5A and 5B and the phase difference  $180+\delta[\text{deg}]$  between the secondary voltages VA and VB, and select a value suitable the actual operating state from the table.

**Please amend the paragraph [0123] beginning on page 71, as follows:**

[0123] In the cold-cathode tube lighting device according to the fourth preferred embodiment of the present invention, in a manner similar to that of the above-described second preferred embodiment, the second block 2 may include the ballast capacitor CB.

The size of the ballast capacitor CB is significantly smaller than the size of the ballast inductor LB. In particular, since the ballast capacitor CB can be formed as the inter-layer capacity of the second substrate 50 and the like, the ballast capacitor CB only has a thickness of about the substrate. Further, when the ballast capacitor CB is used, the overcurrent protection capacitor CB and the matching capacitor ~~CM-CP~~ may be omitted.

Thus, in particular, in the cold-cathode tube lighting device according to the fourth preferred embodiment of the present invention, the second block 2 can be easily downsized. Accordingly, the cold-cathode tube lighting device according to the fourth preferred embodiment of the present invention is extremely effective in thinning liquid crystal displays.

**Please amend the paragraph [0135] beginning on page 78, as follows:**

[0135] In the cold-cathode tube lighting device according to the fifth preferred embodiment of the present invention, the fluctuation of the operating state of each of the cold-cathode tubes 20 is absorbed by each ballast inductor LB. Accordingly, the phase difference between the secondary voltage VA of the step-up transformer 5A and the secondary voltage VB of the step-up transformer 5B is hardly affected by the variations in the operating state among the plurality of

cold-cathode tubes 20. Accordingly, during lighting of the cold-cathode tube 20, the phase difference simply needs to be maintained at a substantially constant quantity for all the cold-cathode tubes 20. The phase correction circuit 6 easily maintains the above-mentioned phase difference to be equal to the constant quantity  $180+\delta[\text{deg}]$  using the delay circuit 7.

In addition, the phase correction circuit may calculate the output secondary voltages VA and VB of the output circuits 9A and 9B-step-up transformers 5A and 5B and the phase difference  $180+\delta[\text{deg}]$  between the secondary voltages VA and VB, based on the actual operating state of the cold-cathode tube 20 and the like with a logic circuit such as a CPU. Instead, the phase correction circuit may store the table of the secondary voltages VA and VB of the step-up transformers 5A and 5B and the phase difference  $180+\delta[\text{deg}]$  between the secondary voltages VA and VB, and select a value suitable the actual operating state from the table.

**Please amend the paragraph [0136] beginning on page 79, as follows:**

[0136] In the cold-cathode tube lighting device according to the fifth preferred embodiment of the present invention, in a manner similar to that of the above-described second preferred embodiment, the second block 2 may include the ballast capacitor CB.

The size of the ballast capacitor CB is significantly smaller than the size of the ballast inductor LB. In particular, since the ballast capacitor CB can be formed as the inter-layer capacity of the second substrate 50 and the like, the ballast capacitor CB only has a thickness of about the substrate. Further, when the ballast capacitor CB is used, the overcurrent protection capacitor CB-CP and the matching capacitor CM may be omitted.

Thus, in particular, in the cold-cathode tube lighting device according to the fifth preferred embodiment of the present invention, the second block 2 can be easily downsized. Accordingly, the cold-cathode tube lighting device according to the fifth preferred embodiment of the present invention is extremely effective in thinning liquid crystal displays.